

Papain and PHMB

Parameters:

Papain, from the fruit of carica papaya, is one of a family of plant enzymes that break down proteins and has been thought to enhance wound healing. If papain is mixed with gelatin, it will not allow it to gel. This is the reason for the note on the gelatin dessert box for not using fresh or frozen fruits such as papaya, pineapple etc. Any change in activity of papain can be assessed by its action on gelatin. Since papain has been associated with more effective wound healing, it is important to know if the PHMB, found in Covidien AMD antimicrobial wound dressings, inactivates papain.

To determine if PHMB inactivates papain, the two were combined and then mixed into a gelatin mixture. Remember, papain causes gelatin to remain liquid, therefore if the gelatin “gels” the PHMB has inactivated the papain.

As a control, hydrogen peroxide, a known in-activator of papain, was also tested. If the gelatin and hydrogen peroxide “gels,” the papain is inactivated.

Methodology:

Gelatin solution was prepared by heating gelatin into water until dissolved. The solution was cooled to room temperature. This solution was added to test tubes containing various mixtures of papain-urea (Accuzyme™* debridement agent), PHMB (Cosmocil CQ™* bactericide, 20% PHMB in water) and 3% hydrogen peroxide. The test tubes were then placed in refrigerator and observed after two hours.

The following observations were made.

Test Tube #	Solution Mixture	Result
1	Gelatin only	Gel
2	Gelatin + Accuzyme	Liquid
3	Gelatin + Accuzyme + PHMB	Liquid
4	Gelatin + PHMB	Gel
5	Gelatin + Accuzyme + 3% hydrogen peroxide	Gel
6	Gelatin + 3% hydrogen peroxide	Gel

Conclusion:

Based on the results it can be concluded that PHMB does not inactivate papain.

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